

REMARKS

Claims 1, 3, 4, 5, 6, 7, 9, 13, 14, 19, 22, 23, 25, 26, 27, 29, 33, 34, 39, 42, 43 and 45 have been amended.

Claims 1-46 are present in the subject application.

In the office action dated October 12, 2005, the Examiner has indicated that claims 11, 12, 14, 22, 31, 32, 34 and 42 contain patentable subject matter, has rejected claims 1, 3-7, 15, 20, 23, 43 and 45 under 35 U.S.C. §102(b) and has rejected claims 2, 8-10, 13, 16-19, 21, 24-30, 33, 35-41, 44 and 46 under 35 U.S.C. §103(a). Favorable reconsideration of the subject application is respectfully requested in view of the following remarks.

Initially, the Examiner has objected to claims 11, 12, 14, 22, 31, 32, 34 and 42 as being dependent upon a rejected base claim, but further indicated that these claims would be allowable if re-written in independent form. Accordingly, claims 22 and 42 have been re-written in independent form with slight changes to claim 22 and are considered to be in condition for allowance.

The Examiner has rejected claims 1, 3-7, 15, 20, 23, 43 and 45 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,445,921(Bell). Briefly, the present invention is directed toward a multi-hop wireless Ad-Hoc network employing a voice reservation protocol. The protocol supports voice and data communication and incorporates retransmission and acknowledgement mechanisms. A TDMA frame architecture is dynamically selected depending on voice mode operation (e.g., simplex/duplex) and associated retransmission/acknowledgement mechanisms. A source node transmits a reservation packet that embeds TDMA frame architecture and other information. The packet is transmitted to a destination node and is further piggybacked on existing neighbor discovery packets to reduce overhead. Each intermediate network node along the propagation path determines the manner in which to accomplish slot reservation based on the

embedded information in the reservation packet. The protocol may use separate dedicated channels or a single channel for voice and data, and supports voice/data load balancing over different channels. In addition, the protocol may utilize speech silence and increased communication reliability to enhance performance.

The Examiner takes the position that the Bell Patent discloses the features within these claims.

This rejection is respectfully traversed. However, in order to expedite prosecution of the subject application, independent claims 1, 23, 43 and 45 have been amended and recite the features of dynamically selecting a frame architecture from among a plurality of frame architectures employed by the communication unit or communicating units based on the mode of communications and utilization of a retransmission scheme over the reserved communication link, wherein the plurality of frame architectures support full duplex and simplex modes of communications and retransmission of information.

The Bell Patent does not disclose, teach or suggest these features. Rather, the Bell Patent discloses a wireless communication device for establishing communication with a remote terminal device through a cordless or a mobile base station. The wireless communication device has a cordless section and a mobile section. The cordless section is for communicating with a remote terminal device through the cordless base station in a cordless mode used for a cordless call. The mobile section is for communicating with the remote terminal device through the mobile base station in a mobile mode used for a mobile call. A processor of the wireless communications device detects a drop of a current call using the cordless service, for example, and re-establishes the communication using the mobile service (e.g., See Abstract).

Thus, the Bell Patent discloses detection of a dropped call using a first service and re-

establishing the call using a second different service. In other words, the Bell Patent discloses switching between a cordless system and a cellular system in response to dropped calls. Although the Bell Patent discloses that the cellular system may be AMPS, GSM, TDMA or CDMA, while the cordless system may be DECT, FM, Spread Spectrum or BlueTooth (e.g., See Column 2, Lines 39 - 41), the Bell Patent is generally silent with respect to structure of frame architectures, reservation of communication channels and retransmission schemes. In fact, the Bell Patent merely switches between two services (i.e., cellular and cordless) and utilizes the fixed mechanisms (e.g., frames, etc.) of the employed service or protocol to re-establish calls. Accordingly, there is no disclosure, teaching or suggestion of dynamically selecting a frame architecture from among a plurality of frame architectures employed by the communication unit or communicating units based on the mode of communications and utilization of a retransmission scheme over a reserved communication link, wherein the frame architectures support full duplex and simplex modes of communications and retransmission of information as recited in the claims.

Since the Bell Patent does not disclose, teach or suggest the features recited within independent claims 1, 23, 43 and 45 as discussed above, these claims are considered to be in condition for allowance.

Claims 3-7, 11-12, 15, 20, 31-32 and 34 depend either directly or indirectly from independent claims 1 or 23 and, therefore, include all the limitations of their parent claims. Dependent claims 3-5 and 34 have been amended for consistency with their amended parent claims, while dependent claims 6 and 7 have been amended to define further features of the present invention. The dependent claims are considered to be in condition for allowance for substantially the same reasons discussed above in relation to their parent claims and for further limitations recited in these claims.

The Examiner has rejected claims 2, 8-10, 13, 16, 17, 21, 24-30, 33, 35-37, 40, 41, 44 and 46

under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,445,921(Bell) in view of U.S. Patent Application Publication No. 2003/0012176(Kondylis et al.). Briefly, the present invention is directed toward a multi-hop wireless Ad-Hoc network employing a voice reservation protocol as described above.

Initially, claims 2, 8-10, 13, 16, 17, 21, 24-30, 33, 35-37, 40, 41, 44 and 46 depend, either directly or indirectly, from independent claims 1, 23, 43 or 45 and, therefore, include all the limitations of their parent claims. Claims 9, 13, 25-27, 29 and 33 have been amended for consistency with their amended parent claims and/or to define further features of the present invention.

The Examiner takes the position that the Bell patent discloses all the limitations within the parent claims, while the Kondylis et al. publication discloses features within the dependent claims. The Examiner further alleges that it would have been obvious to combine the Bell patent and Kondylis et al. publication to attain the claimed invention.

This rejection is respectfully traversed. As discussed above, the Bell patent does not disclose, teach or suggest the features of dynamically selecting a frame architecture from among a plurality of frame architectures employed by the communication unit or communicating units based on the mode of communications and utilization of a retransmission scheme over a reserved communication link, wherein the plurality of frame architectures support full duplex and simplex modes of communication and retransmission of information.

The Kondylis et al. publication does not compensate for the deficiencies of the Bell patent and similarly does not disclose, teach or suggest these features. Rather, the Kondylis et al. publication discloses effective communication routing of unicast and broadcast data traffic in wireless Ad-Hoc networks. The routing technique separates the signaling and data transmission

portions of the data frame such that the length of the signaling portion is independent of the length of the data portion. In the signaling portion, reservations are able to be performed and confirmed, while the data portion also includes a reservation confirmation portion which allows reservations made during the signaling portion of the frame to be confirmed immediately prior to transmission of the data (e.g., See Abstract). Transmission frames are provided for both unicast and broadcast transmissions which provide a data structure for the signaling scheme used. The unicast frame structure includes a plurality of signaling mini-slot triplets, each of which provide an opportunity for nodes to compete for the reservation of at least one data slot. The signaling portion of the broadcast frame structure provides a plurality of reservation mini-slots to allow nodes to request reservation of a data slot. The data portion of the broadcast frame structure also provides a plurality of signaling mini-slots to allow for checking of validity of the reservation of each data slot prior to data transmission (e.g., See Paragraph 0045). The network for unicast and broadcast transmissions includes nodes that are half duplex or, in other words, can either transmit or receive at a given time, but cannot do both simultaneously (e.g., See Paragraphs 0058 and 0105).

Thus, the Kondylis et al. publication discloses half duplex operation with unicast and broadcast frames utilized based on the type of transmission desired (e.g., a unicast or broadcast message). There is no disclosure, teaching or suggestion of dynamically selecting a frame architecture from among a plurality of frame architectures based on the mode of communication and utilization of a retransmission scheme over a reserved communication link as recited in the claims. Further, since the nodes are limited to half duplex operation, the Kondylis et al. publication does not disclose, teach or suggest a plurality of frame architectures supporting full duplex and simplex communication modes and retransmission of information as recited in the claims.

Since the Bell patent and Kondylis et al. publication do not disclose, teach or suggest, either

alone or in combination, the features recited in claims 2, 8-10, 13, 16, 17, 21, 24-30, 33, 35-37, 40, 41, 44 and 46 as discussed above, these claims are considered to be in condition for allowance.

The Examiner has rejected claims 18, 19, 38 and 39 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,445,921(Bell) in view of U.S. Patent Application Publication No. 2003/0012176(Kondylis et al.) and further in view of U.S. Patent Application Publication No. 2004/0209627(Shiraga). Briefly, the present invention is directed toward a multi-hop wireless Ad-Hoc network employing a voice reservation protocol as described above.

Initially, claims 18-19 and 38-39 depend, either directly or indirectly, from independent claims 1 and 23, respectively, and, therefore, include all the limitations of their parent claims. Claims 19 and 39 have been amended for consistency with their amended parent claims.

The Examiner takes the position that the combination of the Bell patent and the Kondylis et al. publication discloses all the limitations in the parent claims, while the Shiraga publication discloses features within these dependent claims. The Examiner further alleges that it would have been obvious to combine the Bell patent and the Kondylis et al. and Shiraga publications to attain the claimed invention.

This rejection is respectfully traversed. As discussed above, the combination of the Bell patent and Kondylis et al. publication does not disclose, teach or suggest the features of dynamically selecting a frame architecture from among a plurality of frame architectures employed by the communication unit based on the mode of communications and utilization of a retransmission scheme over a reserved communication link, wherein the plurality of frame architectures support full duplex and simplex modes of communications and retransmission of information.

The Shiraga publication does not compensate for the deficiencies of the Bell patent and Kondylis et al. publication. Rather, the Shiraga publication discloses a first terminal apparatus

comprising a computer main body and a second terminal apparatus comprising a displaying section, wherein the two terminal apparatuses perform wireless communication with each other without communication crossing. A management center obtains the positional information of a first terminal apparatus, and then records the positional information. The management center determines a communication channel free from communication crossing, depending on the positional information. The communication channel determined by the management center is transmitted to the first terminal apparatus, where the first terminal apparatus and a second terminal apparatus perform wireless communication with each other through the received communication channel (e.g., See Abstract). There is no disclosure, teaching or suggestion of dynamically selecting a frame architecture based on a mode of communication and a retransmission scheme of a reserved communication link, and the plurality of frame architectures supporting full duplex and simplex communication modes and retransmission of information as recited in the claims.

Since the Bell patent and Kondylis et al. and Shiraga publications do not disclose, teach or suggest, either alone or in combination, the features recited in claims 18, 19, 38 and 39 as discussed above, these claims are considered to be in condition for allowance.

In addition to the foregoing, there is no apparent reason or motivation to combine the Bell patent and Kondylis et al. and Shiraga publications. In particular, the Bell patent is directed toward a system switching between cellular and cordless services in response to a dropped call, while the Kondylis et al. publication is directed toward unicast and broadcast data transmissions in an Ad-Hoc wireless network. The Shiraga publication is directed toward assignment of frequency channels to avoid communication crossings. Thus, these documents are directed toward diverging networks and toward diverging applications within those networks and there is no apparent reason, motivation or suggestion to combine their teachings absent prohibited hindsight derived from Applicant's own

disclosure. Accordingly, the proposed combination of the Bell patent and Kondylis et al. and Shiraga publications does not render the claimed invention obvious.

The application, having been shown to overcome issues raised in the Office Action, is considered to be in condition for allowance and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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